Chapter 9

STEAM LOCOMOTIVES
PART 230

Introduction

The first Federal statute addressing steam locomotives was the Ash Pan Act passed by Congress on May 30, 1908. The Act described how the ash pans were to be attached to the steam boiler and that they were to be maintained in a safe suitable condition for service It also required that all operating mechanisms of the ash pans be arranged so that they may be safely operated. Prior to the Act, a person had to empty the ash pan by crawling under the locomotive, thereby making the individual subject to injury or death if the locomotive moved. Although the Ash Pan Act was repealed by Congress as part of the "Federal Railroad Safety Authorization Act of 1982," ash pans are still under Federal regulations as referenced in Part 230.

On February 17, 1911, Congress passed the Locomotive Inspection Act, bringing all locomotive steam boilers under Federal auspices and laying out the structure of the Bureau of Locomotive Inspection with its attendant administrative and field force personnel of 50 Locomotive Inspectors. The Bureau was eventually made a part of the Interstate Commerce Commission. This act held the District Inspector responsible for the locomotives housed in his district. On March 4, 1915, the act was amended to include not only the steam boiler but the entire locomotive and its appurtenances. The steam locomotive regulations were then codified under 49 CFR Part 230. There have since been many revisions, with the latest being on November 17, 1999, when FRA issued a Final Rule, *Steam Locomotive Inspection and Maintenance Standards*.

The new rule became effective January 18, 2000. The implementation of the new rule was designed to allow the steam owner/operators to phase in the new requirements over a period of time. The new rule relaxed the time periods for required maintenance standards. In order for the owner/operators to gain the benefits of the new rule, they must perform a boiler survey and prepare an updated specification card (FRA Form 4.) FRA also allowed railroads that had rebuilt their boilers after September 25, 1995, and performed a boiler survey prior to the rule being issued (or if the work was performed prior to the September date,) to request special consideration to come under the new standards.

Requests for flue removal extensions under the provisions of the old regulation, 49CFR 230.10, were only considered until January 8, 2002. At that time, locomotives would be required to receive a 1,472 day inspection (§230.17) which includes the boiler survey and a newly prepared specification card (FRA Form 4).

Additionally, all steam locomotives had until January 18, 2001, to comply with specific requirements identified in the Final Rule as follows;

- § 230.7 Owner, operator, and railroad jointly responsible for safety and compliance.
- § 230.51 Each boiler shall be equipped with a minimum of two water glasses.
- § 230.57 Two water delivery systems tested at the start of each day and as often as required to ensure operation.
- § 230.68 Speed indicators on locomotives operated in excess of 20 mph.
- § 230.70 Pre-departure inspection of braking systems.
- § 230.85 Audible warning device (horn).
- § 230.87 Cab lighting, instruments, meters, and gauges, and a light that can be turned on and off that provides the operator sufficient illumination to read orders or timetables.
- § 230.115 Each feed water tank be equipped with a level measurement device capable of being read from the cab or tender deck of the locomotive.
- § 230.116 Oil tanks, maintained free from leaks and provided with safety cut off devices.

All waivers previously issued under the Locomotive Boiler Inspection Act lapsed on the date the locomotive first comes under the newly issued regulation, unless a copy of the waiver is filed with FRA for reconsideration. FRA's Safety Board will review any waiver presented for reconsideration and notify the applicant if the waiver will be continued.

Each Inspector must have knowledge of all the steam locomotives operating in his/her territory, as well as the location of non-operating steam locomotives which could be refurbished and made operative within his/her territory. All of this information must be conveyed to the Regional MP&E Specialist, who is responsible for compiling and maintaining a current list of the operating steam locomotives, as well as the non-operating steam locomotives in each region. The list shall contain the name of the railroad, type of operation (seasonal, tourist, dinner train, public relations), the number and initials of the locomotive, the type of steam locomotive (Pacific, Consolidated, Mallet), configuration (i.e., 2-4-0, saddle tank, compound steam engines), status of the locomotive (operating or non-operating), the average days in-use per year, and the average miles accumulated per year. The Regional MP&E Specialist shall provide this information to the MP&E Staff Director by April of each even-numbered year (2004, 2006, etc.)

Steam locomotive inspections shall be conducted only by FRA Inspectors that have successfully completed the FRA's formal steam locomotive training course.

In regard to the actual boiler inspection, asbestos may be observed and is commonly used on steam locomotives as insulation to prevent thermal loss. As long as the asbestos is not friable (loose and flaking with fibers floating in the air which could be inhaled into the lungs), and/or is completely shielded

to prevent contact, it is not considered to be hazardous. If the asbestos is friable, loose, and flaking, the Inspector need not expose himself/herself to any danger, but immediately inform the owner of the locomotive that the asbestos must be properly removed or completely sealed and isolated from contact before an inspection can be performed. Asbestos fibers are known to be carcinogenic and can cause asbestosis when asbestos fibers are inhaled into the lungs.

A critical area of the steam locomotive is the boiler. Keep in mind that 1 cubic inch of water is converted to 1,600 cubic inches of steam, and at a pressure of 150 psi the temperature of saturated steam is 366 degrees Fahrenheit. This pressure is attempting to rupture the boiler and it is the design, maintenance and inspection required by FRA regulations and good maintenance practices by the owners of steam locomotives which prevents this from occurring. When steam boilers do rupture, it is of a cataclysmic nature which can move the mass of the boiler off the rail, and in many cases injury and death. These facts are presented so that you are aware that a steam boiler is a pressure vessel which can be extremely dangerous, if not properly inspected and maintained.

Currently, FRA is in the process of drafting an updated chapter for Steam Locomotive Inspection and Maintenance Standards. In the interim, when FRA Inspectors are conducting inspections under the recently issued Part 230, they should contact their Regional MP&E Specialist or Headquarters MP&E Specialist if there are any questions or concerns regarding the new regulations.